

REMARKS

The Abstract and claims 1, 2 and 10 have been amended. Claim 3 was previously cancelled and claim 6 is newly cancelled, leaving claims 1-2, 4-5 and 7-11 pending. No new matter is added by virtue of the within amendments; support therefore can be found throughout the specification and in the original and previously presented claims. In particular, support for the amendments to claims 1 and 10 is found in cancelled claim 6; support for the amendment to claim 2 can be found in original claim 2.

As an initial matter, it is noted that a Request for Continued Examination (RCE) is being filed concurrently herewith to insure entry of the within amendments and full consideration of the remarks which follow.

Objections to the Specification (Abstract)

The Abstract has been amended to remove the term "new" as required by the Office Action. Withdrawal of the objection to the Specification (Abstract) is requested in view of the foregoing.

Claim Rejections under 35 USC §102 and 35 USC §103

For the sake of brevity, the remaining rejections are summarized below and are discussed in combination.

Claims 1, 2 and 6 stand rejected under 35 USC §102(b) over Ivers-Tiffée et al. (*Journal of the European Ceramic Society*, 2001, pp. 1805-1811).

Claim 4 stands rejected under §103(a) over Ivers-Tiffée et al. in view of Herbstritt et al. (*Proceedings of the Fourth European Solid Oxide Fuel Cell Conference*, 10th – 14th July 2000, Lucerne, Switzerland, 2000, pp. 697-706 - hereinafter "Herbstritt 1").

Claims 5, 8 and 10-11 stand rejected under 35 USC §103(a) over Ivers-Tiffée et al. in view of Herbstritt et al. (*Electrochemical Society Proceedings*, Volume: 99-19, 1999, pp. 972-980 - hereinafter "Herbstritt 2").

Claim 7 stands rejected under 35 USC §103(a) over Ivers-Tiffée et al. in view of Chen et al. (US 6,645,656).

Claim 9 stands rejected under 35 USC §103(a) over Ivers-Tiffée et al. and Chen et al. and further in view of Herbstritt 2.

The various rejections are discussed amply in the Office Action and the Office's position is not reiterated here, again for the sake of brevity.

Each of the rejections is traversed. The cited references, even in the noted combinations, do not teach or suggest the features of the invention in any manner sufficient to sustain any one of the rejections.

Additionally, without acquiescing to the grounds for the rejections, it is noted that the independent claims of the application have now been amended to further define and clarify the preferred features of the invention.

In particular, the high-temperature solid electrolyte fuel cell according to amended claim 1 comprises an electrolyte boundary layer having a thickness of 100 to 500 nm, i.e., a layer of electrolyte material which is applied on the structured screen printed electrolyte layer obtained according to step (i) by an MOD-process. Thus, this boundary layer is formed between the electrolyte particles applied in step (i) and the nano-porous electrode thin layer deposited in step (ii). Since the electrolyte boundary layer has a thickness of only 100 to 500 nm, it "reproduces" the structure formed by screen printing the electrolyte particles, i.e., due to the low thickness of the electrolyte boundary layer, the large surface area of the electrolyte particles is essentially maintained. Therefore, contact between the electrolyte material and the electrode material, which is decisive for the fuel cell's efficiency, is particularly optimized. As indicated in the first full paragraph at page 4 of the specification, negative interactions between electrode and electrolyte can be prevented and the start-up operation of the cell can be shortened or even avoided by applying such an electrolyte boundary layer.

As with claim 1, the feature of former claim 6 has now been incorporated into process claim 10.

The cited references, even in the stated combinations, do not teach or suggest the application of an electrolyte boundary layer as recited in amended independent claim 1, i.e., a thin (100 to 500 nm) layer of electrolyte material deposited by MOD-process on the electrolyte particles applied by screen printing. Nor do any of the cited references, even in combination, suggest that the above advantageous technical effects could be achieved by applying such an electrolyte boundary layer. Likewise, the cited references fail to teach or suggest the features of the process recited in amended claim 10.

The Examiner relies on Ivers-Tiffée et al. in each of the rejections. However, that reference is clearly deficient and even in combination with the other references, is insufficient to sustain the rejections.

The assertion that an electrolyte boundary layer according to original claim 6 (the subject thereof now being incorporated in claims 1 and 10) is disclosed by Ivers-Tiffée et al. (at page 1809, lines 20 to 25) is respectfully traversed. The text referred to by the Examiner reads:

Sintering single 8YSZ-particles onto the electrolyte substrate and covering the increased surface area by an electrochemical active thin film cathode via MOD (metal-organic deposition) is a possibility to increase the number of active reaction sites significantly.

However, even if it were stipulated that this corresponds to steps (i) and (ii) of the present application, amended claim 1 recites the additional feature "wherein the fuel cell further comprises an electrolyte boundary layer on the structured screen printed electrolyte layer obtained according to step (i), which electrolyte boundary layer is applied by an MOD-process and has a thickness of 100 to 500 nm". Note that the MOD-process in Ivers-Tiffée et al. is mentioned only in relation to "an electrochemical active thin film cathode", but not in relation to any layer of electrolyte material.

The remaining references are relied upon for features recited in Applicant's dependent claims and related process claim 10. However, the deficiencies of Ivers-Tiffée et al. cannot be remedied by these other applied references.

The Office Action makes reference to Applicant's product-by-process claims (Office Action, pp. 7-8). It is respectfully submitted that the present claims distinguish the product of the present application from the product of the prior art.

In sum, Applicant respectfully submits that the high-temperature solid electrolyte fuel cell according to amended claim 1 is both novel and non-obvious over the art cited. Likewise, the process of claim 10 is believed to be novel and non-obvious as well.

Each of the §102 and §103 rejections are properly withdrawn. For example, see *In re Marshall*, 198 USPQ 344, 346 (CCPA 1978) ("[r]ejections under 35 U.S.C. §102 are proper only when the claimed subject matter is identically disclosed or described in the prior art.") Additionally, it is well-known that to establish a *prima facie* case of obviousness, three basic criteria must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference(s) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143.

There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the cited references to make the claimed invention, nor is there a reasonable expectation of success.

Lastly, Applicant's previous response spoke to the unexpected, highly superior results of the present invention which further rebuts any case of *prima facie*

obviousness contended. Applicant is amenable to submitting the noted results in Declaration form if the Examiner considers it necessary to overcome the 103 rejections.

In view of the above amendments and remarks, Applicant believes the pending application is in condition for allowance.

REQUEST FOR EXTENSION OF TIME AND FEE AUTHORIZATION

Applicant hereby petitions for a two month extension of time to file the within response. The Commissioner is authorized to charge the extension fee, the RCE fee and any other fees attributable to the within response (or credit any overpayment) to Deposit Account No. 04-1105, Reference No. 62163(45107).

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Respectfully submitted,

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